CLAIMS

1. A method for determination of a parameter of a system generating a signal containing information about the parameter, comprising the step of short time transforming the signal substantially in accordance with

$$L(\sigma,\omega,t)=\int_0^{t} v_i(t-\lambda)e^{-(\sigma+j\omega)\lambda+\varphi}d\lambda$$

in which v_i is the signal, L is the transformed signal, σ is a time constant, ω is an angular frequency, and φ is a phase.

2. A method according to claim 1, wherein the step of transforming comprises filtering the signal v_i with a filter having a pole at $\sigma + j\omega t$ and a pole at $\sigma - j\omega t$.

3. A method according to claim 1 or 2, comprising steps of transforming the signal v_i for a plurality of sets of σ and ω values.

4. A method according to ~~any of the preceding~~ claims, further comprising the step of determining a maximum of at least one transformed signal $L(\sigma,\omega,t)$.

5. A method according to ~~any of the preceding~~ claims, further comprising the step of comparing transformed signals L with corresponding reference signals in order to determine parameters of the system.

6. A method according to ~~any of the preceding~~ claims, further comprising a step of pre-processing the signal before the step of short time transforming, the pre-processing being selected from the

group consisting of filtering, rectification, differentiation, integration, and amplification.

7. A method of transmitting a signal containing information of a set of parameters of a system generating the signal, comprising processing the signal according to ~~any of the preceding~~ claims 1 and further comprising the step of transmitting the determined parameter values.

8. A method according to claim 7 further comprising the step of generating a copy of the signal from the transmitted parameter values.

9. A method of transmitting a signal containing information of a set of parameters of a system generating the signal, comprising processing the signal according to ~~any of the preceding~~ claims 1 and further comprising the steps of

comparing the signal with a library of signals generated for a predetermined set of parameter values by the system,

selecting the library function that constitutes the best match to the signal, and

transmitting an identification signal that identifies the matching library function.

10. A method according to claim 9, further comprising the steps of receiving the identification signal and generating the corresponding library signal.

11. A method of classifying a system according to one or more parameters of the system generating a signal containing information about the one or more parameters, comprising determining the one or more parameters according to ~~any of~~ claims 1~~-6~~ and further comprising the step of classifying the system in accordance with

the one or more determined parameters into one class of a set of predefined classes defined by predetermined ranges of values of the parameters.

12. A method for communicating an auditory signal, comprising processing the signal by the method according to ~~any of~~ claim~~s~~ ~~1-6~~, transmitting the processed signal, and receiving the processed signal by a receiver.

13. A method according to claim 12, wherein, prior to transmission of the processed signal, the signal is coded into a digital representation, and the coded signal is decoded in the receiver so as to reestablish transient pulse shapes perceived by an animal ear such as a human ear as representing the distinct sound pictures of the auditory signal.

14. A method according to claim 13, wherein the digital transmission is performed at a bandwidth of at the most 4000 bits per second.

15. A method according to claim 14, wherein the bandwidth is at the most 2000 bits per second.

16. A method according to claim 15, wherein the bandwidth is in the interval of 800-2000 bits per second.

17. A method according to any of claims 13-16, wherein a second and further pulses in a sequence of identical pulses are represented by a digital value indicating repetition.

18. A method according to ~~any of~~ claim~~s~~ ~~1-6~~, comprising filtering the signal v_i in a filter bank comprising a plurality of band-pass filters interconnected in parallel with centre frequencies ranging from 1400 Hz to 6500 Hz, each of which is connected in series with an envelope detector and a filter bank comprising a plurality of low-pass filters interconnected in parallel and having cut-off

frequencies ranging from 300 Hz to 3000 Hz and time constants ranging from 1500 s^{-1} to 12000 s^{-1}.

19. An apparatus for determination of a parameter of a system generating a signal containing information about the parameter, comprising a processor that is adapted to short time transform the signal substantially in accordance with

$$L(\sigma,\omega,t) = \int_0^t v_i(t-\lambda)e^{-(\sigma+j\omega)\lambda+\varphi}d\lambda$$

in which v_i is the signal, L is the transformed signal, σ is a time constant, ω is an angular frequency, and φ is a phase.

20. An apparatus according to claim 19, wherein the processor comprises a filter for filtering the signal v_i and having a pole at $\sigma + j\omega t$ and a pole at $\sigma - j\omega t$.

21. An apparatus according to claim 19 or 20, wherein the processor comprises a plurality of filters for filtering the signal v_i, each filter having a different set of σ and ω values.

22. An apparatus according to claim 19, wherein the apparatus comprises a communication channel transmitter, and the processor is adapted to determine the one or several parameters of the system, and

to transmit the one or several system parameters over a wireless or a cable communication channel.